

Add the following new claims:

18. (New) The DNA of claim 3 wherein, based on the degeneracy of genetic codes, one or more nucleotides are replaced with different nucleotides while conserving the encoding amino acid sequence.

19. (New) The DNA of claim 4, wherein, based on the degeneracy of genetic codes, one or more nucleotides are replaced with different nucleotides while conserving the encoding amino acid sequence.

REMARKS

The above amendments supplement and partially supplant the amendments made in the main Reply of May 9, 2002. The above amendments should obviate any issues which might exist concerning claims 1 and 5, claim 1 having been deleted above and claim 5 now having been made dependent on claim 2, with two new claims 18 and 19, being similar to claim 5 but being dependent respectively on claims 3 and 4.

Since the DNA as defined in claims 2-4 contains at least the nucleotide sequence of SEQ ID NO:4 or its complementary nucleotide sequence, it is believed that the DNA as defined in claims 2-5 is clearly distinct from the disclosure of Drummond, which discloses only a part of the nucleic acid encoding human Dhh.

It seems to applicants that the examiner considers that SEQ ID NO:4 encodes a fragment of the mature protein, while SEQ ID Nos:5 and 6 encode a mature and full length form (page 5, lines 6-10 of the Office Action). However, this is a misunderstanding. The examiner's attention is invited to the descriptions at page 24, lines 8-16; page 28, lines 6-8; and page 33, lines 12-24 of the specification. It is clear that the nucleotide sequence of SEQ ID NO:4 encodes a mature human Dhh and the nucleotide sequences of SEQ ID Nos:5 and 6 encode precursor forms of a human Dhh.

Favorable consideration is respectfully requested.

Respectfully submitted,

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Version with Markings to Show Changes Made

2. (Twice Amended) ~~The~~ An isolated DNA of claim 1  
which encodes a desert hedgehog protein of human origin, and  
which contains the whole of the nucleotide sequence of SEQ ID  
NO:4 or its complementary nucleotide sequence.

3. (Twice Amended) ~~The~~ An isolated DNA of claim 1  
which encodes a desert hedgehog protein of human origin, and  
which contains the whole of the nucleotide sequence of SEQ ID  
NO:5 or its complementary nucleotide sequence.

4. (Twice Amended) ~~The~~ An isolated DNA of claim 1  
which encodes a desert hedgehog protein of human origin, and  
which contains the whole of the nucleotide sequence of SEQ ID  
NO:6 or its complementary nucleotide sequence.

5. (Twice Amended) The DNA of claim ~~1~~2, wherein,  
based on the degeneracy of genetic codes, one or more  
nucleotides are replaced with different nucleotides while  
conserving the encoding amino acid sequence.

17. (Amended) ~~The~~ An isolated DNA of claim 1 which  
encodes a desert hedgehog protein of human origin, which has a  
DNA identity of at least 80% homology to either of DNAs of  
mouse desert hedgehog, mouse and human Indian hedgehog, and  
mouse, chicken, human and zebrafish sonic hedgehog proteins,  
and which is not identical to the DNAs of said mouse, chicken,  
human and zebrafish sonic hedgehog proteins.